



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Bailey et al.

Application No. 10/802,460

Filed: March 16, 2004

**RE: SYSTEM, METHOD AND APPARATUS FOR
SELF-CLEANING DRY ETCH**

Group Art Unit: 2811

Examiner: KANG, D.

Atty. Docket No. LAM2P460

Date: October 5, 2005

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on **October 5, 2005**.

Signed: _____

Melinda M. Ward

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
Alexandria, VA 22313-1450

Dear Sir:

The references listed in the attached PTO Form 1449, copies of which are attached, may be material to examination of the above-identified patent application. Applicants submit these references in compliance with their duty of disclosure pursuant to 37 CFR §§ 1.56 and 1.97. The Examiner is requested to consider these references and to acknowledge such consideration by initialing the attached PTO Form 1449 at the appropriate locations.

The fee of \$180.00 set forth in 37 C.F.R. § 1.17(p) is attached hereto. The Commissioner is authorized to charge any additional fees that may be due to our Deposit Account No. 50-0805 (Order No. LAM2P460).

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that these references indeed constitute prior art.

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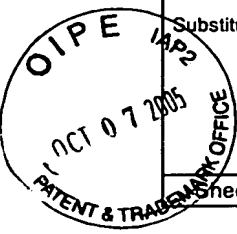
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Respectfully submitted,
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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)

Sheet 1 of 4

Complete if Known

Application Number	10/802,460
Filing Date	March 16, 2004
First Named Inventor	Bailey
Art Unit	2811
Examiner Name	KANG, D.
Attorney Docket Number	LAM2P460

U.S. Patent Documents

Examiner Initials	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	A	US 2004/242012	Dec 2, 2004		
	B	6,767,829	Jul 27, 2004	Akahori	
	C	6,600,229	Jul 29, 2003	Mukherjee et al.	
	D	6,482,755	Nov 19, 2002	Ngo et al.	
	E	US 2001/018271	Aug 30, 2001	Yanagisawa	
	F	6,440,840	Aug 27, 2002	Chen	
	G	US 2001/015175	Aug 23, 2001	Masuda et al.	
	H	6,417,093	Jul 9, 2002	Xie et al.	

Foreign Patent Documents

Examiner Initial	Cite No. ¹	Foreign Patent Document No.	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ -Number- ⁴ Kind Code ⁵ (if known)				
	I	EP 1 320 128 A1	06/18/03	AMI Semiconductor		<input type="checkbox"/>
	J	WO 03/026004	03/27/03	Tokyo Electron Limited		<input type="checkbox"/>
	K	EP 1 081 751 A2	03/07/01	Applied Materials		<input type="checkbox"/>
	L	EP 1 041 614 A1	10/04/00	LSI Logic Corporation		<input type="checkbox"/>
	M	JP 11 067766	03/09/99	Sony Corp.		<input type="checkbox"/>

Non Patent Literature Documents

Examiner Initial	Cite No.	Include name of author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
	N	NAGRAJ S. KULKARNI, ROBERT T. DeHOFF, "Application of Volatility Diagrams for Low Temperature, Dry Etching, and Planarization of Copper", Journal of The Electromechanical Society, 2002, pp G620 – G632
	O	LYNN R. ALLEN, JOHN M. GRANT, "Tungsten plug etchback and substrate damage measured by atomic force microscopy", J. Vac. Sci. Technol. May/June 1995, pp 918 – 922
	P	
	Q	

Examiner Signature		Date Considered	
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Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language translation is attached.

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				Application Number	10/802,460
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				Examiner Name	KANG, D.
Sheet	2	of	4	Attorney Docket Number	LAM2P460

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		Number-Kind Code ² (if known)			
	A2	6,383,935	May 7, 2002	Lin et al.	
	B2	6,350,664	Feb 26, 2002	Haji et al.	
	C2	6,350,364	Feb 26, 2002	Jang	
	D2	6,323,121	Nov 27, 2001	Liu et al.	
	E2	6,234,870	May 22, 2001	Uzoh et al.	
	F2	6,221,775	Apr 24, 2001	Ference et al.	
	G2	6,096,230	Aug 1, 2000	Scatz et al.	
	H2	6,056,864	May 2, 2000	Cheung	

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		Country Code ³ -Number- ⁴ Kind Code ⁵ (if known)				
	I2	WO 02/37541 A2	May 10, 2002	Applied Materials Inc.		<input type="checkbox"/>
	J2	WO 00/59005	Oct 5, 2000	Tokyo Electron Limited		<input type="checkbox"/>
	K2	WO 99/46812	Sep 16, 1999	Applied Materials Inc.		<input type="checkbox"/>
	L2					<input type="checkbox"/>
	M2					<input type="checkbox"/>

Non Patent Literature Documents

Examiner Initial	Cite No.	Include name of author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
	N2	N. HOSOI, Y. OHSHTA, "Plasma Etching of Copper Films Using IR Light Irradiation", Mat. Res. Soc. Symp. Proc. Vol. 337, 1995, pp 201 – 205
	O2	Y. OHSHTA, N. HOSOI, "Lower temperature plasma etching of Cu using IR light irradiation", Thin Solid Films, 1995"
	P2	
	Q2	

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		Number-Kind Code ² (if known)			
	A3	6,051,496	Apr 18, 2000	Jang	
	B3	5,968,847	Oct 19, 1999	Ye	
	C3	5,387,315	Feb 7, 1995	Sandhu	
	D3	5,256,565	Oct 26, 1993	Bernhardt	
	E3	5,098,516	Mar 24, 1992	Norman	
	F3				
	G3				
	H3				

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		Country Code ³ -Number- ⁴ Kind Code ⁵ (if known)				
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	J3					<input type="checkbox"/>
	K3					<input type="checkbox"/>
	L3					<input type="checkbox"/>
	M3					<input type="checkbox"/>

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	N3	WILLIAM F. MARX, YUNJU RA, RICHARD YANG, CHING-HWA CHEN, "Plasma and processing effects of electrode spading for tungsten etchback using a bipolar electrostatic wafer clamp", J. Vac. Sci Technol., Nov/Dec 1994, pp 3087 - 3090
	O3	J. FARKAS, K.-M. CHI, M. J. HAMPDEN-SMITH, T.T. KODAS, "Low-temperature copper etching via reactions with Cl ₂ and Pet ₃ under ultrahigh vacuum conditions," American Institute of Physics, February 1, 1993, pp 1455 - 1460
	P3	DAVID T. PRICE, RONALD J. GUTMANN, SHYAM P. MURARKA, "Damascene copper interconnects with polymer ILDs", 1997 Thin Solid Films, pp. 523 - 528
	Q3	
Examiner Signature		Date Considered

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	A4				
	B4				
	C4				
	D4				
	E4				
	F4				
	G4				
	H4				

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		Country Code ³ -Number- ⁴ Kind Code ⁵ (if known)				
	I4					<input type="checkbox"/>
	J4					<input type="checkbox"/>
	K4					<input type="checkbox"/>
	L4					<input type="checkbox"/>
	M4					<input type="checkbox"/>

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	N4	KAZUhide OHNO, MASAaki SATO, YOSHINOBU ARITA, "Reactive Ion Etching of Copper Films in SiCl ₄ and N ₂ Mixture", Japanese Journal of Applied Physics, June 1989, No. 6, Part 2, pp 1070 - 1072
	O4	SEONGJU PARK, T.N. RHODIN, LC. RATHBUN, "Halide formation and etching of Cu thin films with Cl ₂ and Br ₂ ", American Vacuum Society, Mar/Apr 1986, pp 168 - 172
	P4	LYNN R. ALLEN, "Tungsten Plug Etchback in a TCP Etcher", Sharp Electronics Technology, Inc., pp 255 - 263
	Q4	K. MOSIG, T. JACOBS, P. KOFRON, M. DANIELS, K. BRENNAN, A. GONZALES, R. AUGUR, J. WETZEL, R. HAVEMANN, A. SHIOTA, "Single and Dual Damascene Integration of a Spin-on Porous Ultra low-k Material", IEEE, 2001 pp. 292 - 294
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